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BERTRAM P. BROWN, M.D., Director

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State Office Building, 217 West First  
Street MADISON 1271

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GUY P. JONES  
EDITOR

## *Sanitization of Eating Utensils\**

A. HARRY BLISS, Camp Inspector, Division of Immigration and Housing, State of California, Fresno

Sanitarians, who have worked in the field and attempted to place before the public a program of sanitization of eating utensils, know how ineffective has been the education of the public, and particularly the personnel of eating places, in this endeavor. Procedures to produce the proper results are known, but with the methods now generally employed, they are not being obtained.

The sanitarian, if he were equipped to supervise a program based on the information available in the literature, would have to carry with him a kit composed of bottles and swab set to obtain bacterial counts, an orthotolidine set and starch papers for chlorine testing; colorimetric set to check the use of Zephiran; a sediment tester; a thermometer; and an ultra violet light meter. This list can be added to, and probably will be in the near future. However, all of these devices, which few of us have, will not result in a good program of sanitization. Until the public demands good dishwashing practices and until trained personnel are working in public eating places, what we want will not be obtained.

In evaluating the various methods of cleaning and disinfecting eating utensils, it is necessary to remember that there is no universal method that will have practical application under the variety of situations that food and drink are served. Certainly, chlorine,

for example, has many disadvantages and is not adaptable under certain conditions.

Sanitization is a legitimate word, meaning to make sanitary. Although the term has found little acceptance except in the literature, it probably explains what we are trying to accomplish better than any other word. Sanitization bacteriologically speaking, is another term for disinfection. Sterilization is practically impossible to attain and furthermore unnecessary.

To all public health men the need for adequate protection of the customers in public eating and drinking places is well established. There is no longer any question as to the value of a sanitization program in reducing the chains of infection; the concern lies in finding practical methods, which will give efficient results under actual working conditions.

The methods in use today include disinfection by heat, dishwashing machines, chlorine and other chemicals, ultra violet light and single service paper containers. Each of these procedures has a place in any sanitization program. The inspector is confronted with a variety of situations, and he must be able to recommend a good program rather than to enforce any specific law, unless the procedures are written into regulations which may be changed to meet new developments.

The California State Department of Public Health, in the Weekly Bulletin of July 20, 1940, states that it

\* Abstract of a paper presented before the Department of Health Officers, League of California Cities, September 18, 1940.



is perfectly agreeable that proprietors of eating and drinking places clean their utensils with soap and hot water, followed by rinsing in clear water and by thorough drying. The article goes on to say "that there is no objection to the use of many chemical products now on the market, but the Department desires to emphasize the fact that none of these is required by law." Furthermore, it states that none of the chemical methods are more effective than hot water and soap and steam.

Heat is a dangerous agent to trust, because it can act in any one of three ways on bacteria. Depending upon the particular bacterium, it may stimulate bacterial multiplication, inhibit bacterial growth, or kill all the bacteria. In as much as it is not possible to use boiling water when dishes, utensils, etc. are washed by hand, the consensus of opinion is to use a disinfectant temperature of 170 degrees F., and a chlorine bath containing at least 100 p.p.m. of free chlorine. For actual hand scrubbing, water should be at least 120 degrees F. The sanitarian, in practice, seldom finds dishwater of that temperature. The conclusion is that actual control requires the dependence upon some agent in addition to heat.

It is interesting to note some of the remarks which are made in the Health News, New York State Department of Health, weekly bulletin of the same date as the Weekly Bulletin mentioned above, to wit: "Washing of eating, drinking and cooking utensils at a temperature of 120 degrees F., using a good detergent followed by rinsing at a temperature of not less than 170 degrees F., will result not only in thorough cleansing but will yield without further disinfecting treatment a total bacterial count within the limits specified in the New York Sanitary Code, which is 100 total count of bacteria per utensil or less." The Code of New York has been amended to set a bacterial standard for eating, drinking and cooking utensils, rather than to prescribe methods to be used. For restaurants, Mr. Tiedeman, Chief of Milk Sanitation of New York State, recommends three general methods: washing by hand, using a good detergent, and rinsing in clean water maintained at a temperature of 170 degrees F. or more; and the use of single service containers; or washing in any efficient and properly operated machine.

These bulletins point to a definite trend in some localities, that is, an attempt to go back to hot water and away from the difficult program of using chlorine. It is generally admitted by anyone who has actually tried to promote the usual program of washing and then dipping in chlorine solution, that about 60 per cent efficient use of chlorine is a good program. However, no matter how discouraging it may become at

times, persistence and education must be continued. The objection on the part of the public to the odor of chlorine in drinking glasses is an influence which has been hard to overcome. Many operators state that they do not use chlorine for that reason. Others do not immerse the glassware for the required length of time. We all know that a lack of sufficient glassware during rush periods is a large factor in the length of time a glass is held in the chlorine bath. If you think you have an efficient program in bars, for example, make the rounds of popular taverns some Saturday night testing for chlorine in rinse waters. You will be surprised as to the number of places you considered sold on the program and who always maintain chlorine in the bath during the week and especially in the day time, but when rushed and not expecting an inspector, simply swish the glasses in cold water and draw another beer.

In this discussion we must mention the standards of the United States Public Health Service, Ordinance and Code Regulating Eating and Drinking Establishments, June 1940 Edition, to wit: After washing—(a) two minutes 170 degrees F., or one-half minute boiling water; (b) two minutes lukewarm chlorine bath—50 p.p.m. to 100 p.p.m.; (c) steam cabinet (170 degrees F.) for 15 minutes, or 200 degrees F. for five minutes; (d) air dry or rinse in running water.

In the opinion of experts, what is the answer to sanitization of eating utensils?

In the large restaurant, dishwashing machines are recommended, using a wash of at least 120 degrees F., a good detergent, and a rinse of 170 degrees F. Successful operation depends on two factors. First, a conscientious operator, who will not reduce the time of wash and rinse necessary to produce good standards; and second, all soil must be removed from the wash, for effective sanitization. This is best accomplished with a hot water spray of the utensils when in the rack, before they are placed in the machine. The first consideration may be eliminated by the use of a full automatic dishwasher, with the time and temperature controlled, which should be recommended to all hospitals and restaurants where the business will warrant the expenditure. By the use of a full automatic dishwasher, the personal equation is reduced. However, under all conditions it must have been shown that soil must be removed before the washing operation.

In the smaller restaurants hot water should be mandatory. Because, the average hot water heater is of a home type which will not produce at any length of time water over 140 degrees F., some supplementary chemical disinfection is indicated. Furthermore, washing by hand means water of not over 125 degrees



F. It is recommended that, in hand washing, the following procedure be followed: Wash in hot soapy water of 120 degrees, after excess soil has been removed. The utensils should then be placed in a chlorine solution for several minutes and then dipped in a third compartment containing water of at least 140 degrees F., after which they should be permitted to drain and dry. The use of wire baskets is suggested so that the chlorine rinse may be above 200 p.p.m., since it is almost impossible to obtain, in practice, a retention period in any phase of the procedure.

Quoting from a 1940 Bulletin, by Dr. Parrish, Los Angeles County Health Officer, entitled "Sanitation of Eating and Drinking Utensils"; "Concentration of chlorine has been specified without a time exposure to it \* \* \* In order to shorten the period of soaking and still provide the necessary disinfectant action, the greatest practicable concentration of chlorine is desired \* \* \* Simply dipping and removing a glass from the chlorine is inadequate, but the more thoroughly it is washed in hot soapy water, the shorter time necessary for chlorine exposure."

Dr. Parrish also points out that automatic devices capable of delivering uniformly adequate dosage of chlorine, should be developed. There are on the market a few such instruments, but the personal factor has not been eliminated. As he suggests, a full automatically controlled dosage system serviced by a serving company rather than controlled by the restaurant man himself, would be ideal.

In any discussion involving the use of chlorine, some comments are necessary regarding the two types of chemicals commonly available, namely, the hypochlorites and chloramines. The hypochlorites combine with organic matter and lose their disinfecting ability because the chlorine in the hypochlorites tend to oxidize the organic matter and is therefore not available for use in killing bacteria. The efficiency of hypochlorites is lost almost entirely if used on utensils with food residue. The chloramines do not combine with organic matter but act more slowly and are therefore not as good as the hypochlorites for rinse waters which are kept free of organic matter. It has been found that in the absence of organic matter, it takes one hundred times as much available chlorine from the chloramines to destroy bacterial cells as it does available chlorine in the form of hypochlorites. Therefore, as an example, hypochlorites should be best to rinse water glasses and chloramines should be used to wash glasses with milk film. The hypochlorites lose their strength more rapidly and odors and injury to the hands are more marked.

Bars or liquor establishments, where hot water is not available, present one of the most difficult of all

problems. Probably the most effective method of control is that suggested by Baker and Stone in "Sanitization of the Drinking Glass," a pamphlet published by the National Association of Sanitarians, Inc. Washing is very important and usually neglected in bars. A successful method of glass washing is with a brush device, in clean water containing a detergent. After washing, the glass is placed in a second compartment containing chlorine, made up to 200 p.p.m. and not allowed to drop below 100 p.p.m. The length of time during which the glass is allowed to remain in the solution ranges from a dip to submersion for a period of two to three minutes. If the glasses have been thoroughly washed and placed in an inverted position and allowed to dry without toweling, the rinse or dip has been found to be bacteriologically effective.

The use of an automatic chlorine dosage system with outside servicing would be of considerable benefit. However, we would still be confronted with the towel, which experiments show has no place in public dish and glass washing.

The use of ultraviolet lamps have proven effective in providing a sterile atmosphere for storage. Its use after toweling in bars should be one answer to this problem. The cost, so far as extensive use of the lamps is concerned, is as yet, prohibitive.

In general, it can be pointed out that ultraviolet lamps have been approved by some health departments as a sterilizer. Their effectiveness depends upon the intensity of the ray produced, time of exposure and the necessity of a thoroughly clean utensil. There is certainly considerable eye appeal and, as a public health instrument, it has a useful place in any program of sanitization. The possibility of its use being extended is problematical.

Some of us are certain that until something better comes along, every health department should advocate the use of single service for soda fountains. You are dealing with a business where the type of personnel and the pressure of rush hours are such that the glasses are not sanitized. In addition, the hypochlorites can not be used effectively on milky glasses, and the time exposure is practically never long enough with chloramines. Furthermore, protection of school children should be of paramount importance.

#### MORBIDITY

##### Complete Reports for Following Diseases for Week Ending March 15, 1941

###### Chickenpox

1280 cases: Alameda County 6, Alameda 6, Albany 8, Berkeley 20, Oakland 71, Butte County 2, Fresno County 22, Fresno 4, Selma 4, Eureka 6, Imperial County 1, Brawley 1, Kern County 18, Bakersfield 8, Tehachapi 7, Corcoran 1, Hanford 2, Los Angeles County 99, Alhambra 2, Burbank 5, Compton 6, Covina 1, El Segundo 2, Glendale 10, Hermosa 22, Huntington Park 4, Inglewood 6, Long Beach 10, Los Angeles 107, Montebello 5,



Pasadena 14, Pomona 4, San Fernando 4, San Marino 1, Santa Monica 12, Whittier 3, Torrance 1, South Gate 5, Signal Hill 1, Maywood 5, Bell 5, Marin County 1, Mill Valley 1, Ross 1, Sausalito 2, Mendocino County 9, Merced 2, Monterey County 6, King City 1, Orange County 28, Fullerton 6, Huntington Beach 2, Santa Ana 16, Tustin 7, Palm Springs 3, Sacramento County 55, Sacramento 62, Hollister 10, San Bernardino County 9, Chino 2, Ontario 6, San Bernardino 1, San Diego County 22, Chula Vista 2, National City 8, San Diego 56, San Francisco 168, San Joaquin County 9, Lodi 1, Stockton 18, San Luis Obispo County 3, Paso Robles 4, San Luis Obispo 11, Redwood City 1, San Carlos 6, Santa Barbara County 18, Santa Barbara 9, Santa Maria 2, Santa Clara County 35, Palo Alto 1, San Jose 13, Santa Cruz County 3, Redding 1, Siskiyou County 8, Mount Shasta 3, Solano County 4, Benicia 1, Vallejo 2, Sonoma County 13, Santa Rosa 44, Stanislaus County 22, Modesto 8, Sutter County 6, Tulare County 1, Tuolumne County 3, Sonora 3, Ventura County 2, Santa Paula 2, Yolo County 1, Winters 1, Woodland 11, Yuba County 1, Marysville 2.

#### Diphtheria

19 cases: Oakland 1, San Leandro 1, Fresno County 1, Los Angeles County 2, Los Angeles 3, Calistoga 1, Redlands 2, San Diego 2, Gilroy 1, Mount Shasta 2, Stanislaus County 2.

#### German Measles

841 cases: Alameda County 3, Alameda 2, Albany 3, Berkeley 26, Emeryville 1, Livermore 2, Oakland 3, Pleasanton 5, Martinez 1, Fresno County 6, Fresno 8, Kern County 26, Tehachapi 1, Kings County 2, Lassen County 1, Susanville 4, Los Angeles County 44, Arcadia 3, Claremont 1, Compton 12, Glendale 11, Glendora 1, Huntington Park 6, Long Beach 73, Los Angeles 24, Monrovia 4, Pasadena 9, San Marino 2, South Pasadena 2, Torrance 1, Lynwood 3, South Gate 5, Monterey Park 1, Signal Hill 4, Maywood 2, Gardena 1, Ross 1, Sausalito 1, Mono County 1, Monterey County 4, Monterey 2, Pacific Grove 1, Soledad 1, Napa County 2, Napa 9, Orange County 28, Anaheim 3, Fullerton 2, Santa Ana 7, Seal Beach 1, La Habra 1, Laguna Beach 2, Tustin 4, San Clemente 5, Riverside County 4, Elsinore 28, Perris 9, Riverside 3, Sacramento 5, Ontario 1, San Diego County 112, Chula Vista 2, Coronado 3, Escondido 30, National City 38, Oceanside 1, San Diego 78, San Francisco 8, San Joaquin County 1, Lodi 1, Stockton 6, Paso Robles 1, San Luis Obispo 4, San Mateo County 1, Burlingame 6, Menlo Park 9, Redwood City 1, San Bruno 2, Santa Barbara County 2, Santa Barbara 2, Gilroy 2, Palo Alto 2, San Jose 2, Siskiyou County 1, Solano County 7, Vallejo 5, Sonoma County 1, Modesto 1, Tulare County 5, Exeter 1, Visalia 1, Davis 2, Yuba County 1.

#### Influenza

415 cases: Alameda 2, Berkeley 2, Crescent City 2, Kern County 88, Bakersfield 88, Los Angeles County 40, Alhambra 3, El Monte 3, Glendale 2, Glendora 1, Inglewood 1, Long Beach 3, Los Angeles 27, Pasadena 1, Pomona 1, Sacramento County 1, San Francisco 2, San Luis Obispo County 1, San Luis Obispo 1, Santa Clara County 1, Santa Clara 1, Sonoma County 1.

#### Malaria

2 cases: Oakland 1, Stanislaus County 1.

#### Measles

285 cases: Alameda County 6, Berkeley 3, Oakland 7, San Leandro 1, Butte County 1, Crescent City 1, Fresno County 1, Glenn County 1, Humboldt County 1, Kern County 20, Bakersfield 1, Delano 1, Corcoran 1, Los Angeles County 12, Arcadia 1, Burbank 2, Covina 1, Glendale 3, Inglewood 4, Long Beach 1, Los Angeles 24, Monrovia 1, San Gabriel 1, South Pasadena 2, Gardena 5, Monterey County 16, Monterey 2, Pacific Grove 1, Salinas 1, Napa 2, Nevada County 1, Riverside County 1, Banning 2, Riverside 2, Sacramento County 2, Sacramento 4, San Bernardino County 2, Redlands 1, San Diego County 2, Chula Vista 4, Coronado 5, San Diego 5, San Francisco 6, Menlo Park 1, Santa Barbara County 4, Santa Clara County 1, Mountain View 2, Santa Cruz 2, Shasta County 1, Siskiyou County 7, Solano County 4, Benicia 1, Vacaville 2, Vallejo 8, Sonoma County 1, Stanislaus County 1, Sutter County 1, Tuolumne County 26, Ventura County 1.

#### Mumps

798 cases: Alameda 5, Albany 3, Berkeley 2, Oakland 23, Gridley 3, Contra Costa County 4, Martinez 5, Fresno County 4, Clovis 1, Fresno 1, Reedley 1, Kern County 27, Bakersfield 12, Delano 14, Kings County 1, Los Angeles County 89, Alhambra 1, Compton 2, Glendale 20, Huntington Park 12, Inglewood 2, Long Beach 12, Los Angeles 37, Manhattan 1, Monrovia 7, Montebello 1, Pasadena 2, Pomona 9, Santa Monica 5, Whittier 1, Torrance 1, Hawthorne 1, South Gate 7, Maywood 7, Bell 4, Gardena 1, Monterey County 1, Pacific Grove 1, Salinas 1, Napa 1, Orange County 20, Huntington Beach 7, Newport Beach 15, Santa Ana 15, La Habra 41, Riverside County 8, Corona 6, Indio 24, Sacramento County 1, Sacramento 1, San Bernardino County 8, Ontario 1, San Bernardino 1, San Diego County 5, La Mesa 11, Oceanside 2, San Diego 65, San Francisco 60, San Luis Obispo County 2, Paso Robles 1, San Mateo County 2, San Bruno 2, Santa Barbara County 3, Santa Barbara 46, Santa Clara County 16, Palo Alto 1, San Jose 4, Santa Cruz County 4, Redding 2, Mount Shasta 2, Solano County 22, Vacaville 3, Sonoma County 29, Stanislaus County 10, Corning 3, Exeter 1, Ventura County 13, Ventura 2, Ojai 1, Winters 6, Marysville 1.

#### Pneumonia (Lobar)

59 cases: Oakland 2, San Leandro 1, Selma 1, Kern County 2, Los Angeles County 5, Alhambra 1, El Segundo 1, Glendale 1, Los Angeles 20, Santa Monica 1, Monterey Park 1, Carmel 1,

Salinas 1, Santa Ana 2, Sacramento 2, San Bernardino County 1, San Bernardino 1, San Diego County 1, San Francisco 6, Santa Clara County 1, Solano County 2, Ventura County 1, Fillmore 1, Woodland 1.

#### Scarlet Fever

186 cases: Alameda County 1, Oakland 5, Butte County 6, Gridley 1, Contra Costa County 3, Crescent City 1, Fresno County 3, Kern County 8, Kings County 2, Hanford 1, Los Angeles County 11, Burbank 3, Glendale 1, Long Beach 2, Los Angeles 45, Montebello 1, Pasadena 1, Pomona 1, Lynwood 1, South Gate 4, Signal Hill 1, Maywood 1, Marin County 1, Mariposa County 3, Orange County 2, Fullerton 1, Corona 1, Riverside 2, Indio 3, Sacramento County 4, Sacramento 6, San Bernardino County 1, Ontario 2, San Diego County 1, San Diego 12, San Francisco 5, San Joaquin County 2, Tracy 1, Lompoc 3, Santa Clara County 1, Los Gatos 1, San Jose 3, Santa Cruz County 1, Sonoma County 1, Petaluma 1, Santa Rosa 1, Tulare County 2, Tuolumne County 15, Ventura 1, Yolo County 1, Marysville 1.

#### Smallpox

One case: Riverside County.

#### Typhoid Fever

4 cases: Los Angeles 2, Sacramento 1, Shasta County 1.

#### Whooping Cough

499 cases: Alameda County 2, Alameda 12, Berkeley 29, Oakland 31, Butte County 1, Contra Costa County 5, Concord 4, Fresno County 6, Fresno 1, Calexico 3, Kern County 6, Hanford 1, Los Angeles County 51, Alhambra 1, Compton 1, Culver City 7, El Monte 4, Huntington Park 1, Inglewood 1, Long Beach 11, Los Angeles 40, Montebello 6, Pasadena 13, Redondo 2, San Fernando 1, Santa Monica 9, Lynwood 2, Monterey Park 1, Maywood 6, Bell 1, Gardena 2, Monterey County 5, Napa 6, Orange County 17, Anaheim 1, Huntington Beach 2, Newport Beach 1, Santa Ana 8, Seal Beach 2, La Habra 1, Laguna Beach 4, Corona 1, Riverside 2, Palm Springs 3, Sacramento 10, Hollister 1, San Bernardino County 6, San Bernardino 1, San Diego County 6, San Diego 39, San Francisco 37, San Joaquin County 3, Stockton 1, San Luis Obispo County 8, San Luis Obispo 10, San Mateo County 5, San Bruno 1, San Mateo 2, South San Francisco 1, Santa Barbara County 3, Santa Clara County 8, Gilroy 1, San Jose 1, Santa Cruz 2, Redding 1, Solano County 6, Sonoma County 1, Stanislaus County 1, Tehama County 2, Tulare County 1, Ventura County 15, Fillmore 1, Santa Paula 5, Ventura 2, Woodland 1, Lodi 3.

#### Meningitis (Epidemic)

One case: San Diego County.

#### Dysentery (Amoebic)

2 cases: Kern County 1, California 1.\*

#### Dysentery (Bacillary)

7 cases: Fresno County 2, Los Angeles County 1, Los Angeles 3, Sonoma County 1.

#### Leprosy

One case: Contra Costa County.

#### Poliomyelitis

One case: Sacramento County.

#### Trachoma

12 cases: Alameda County 1, Kings County 7, Los Angeles 1, Napa 1, Santa Clara County 1, Santa Cruz County 1.

#### Paratyphoid Fever

One case: Napa County.

#### Trichinosis

One case: Oakland.

#### Undulant Fever

8 cases: Colusa County 1, Fresno County 1, Kern County 1, Los Angeles County 2, San Bernardino County 1, Santa Rosa 1, Yolo County 1.

#### Septic Sore Throat

One case: Tulare.

#### Epilepsy

41 cases: Alameda 1, Berkeley 1, Oakland 1, Los Angeles County 2, Los Angeles 17, Pasadena 1, Napa County 1, Riverside 1, San Bernardino County 3, San Francisco 8, San Joaquin County 5.

#### Rabies (Animal)

5 cases: Burbank 1, Los Angeles 4.

\* Cases charged to "California" represent patients ill before entering the State or those who contracted their illness traveling about the State throughout the incubation period of the disease. These cases are not chargeable to any one locality.

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